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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/269,485	03/29/1999	EVA KUHN	CU-1867RJS	1080

7590 11/12/2003

LADAS & PARRY  
224 SOUTH MICHIGAN AVENUE  
CHICAGO, IL 60604

EXAMINER
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ZHEN, LI B

ART UNIT	PAPER NUMBER
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2126

14

DATE MAILED: 11/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/269,485

Applicant(s)

KUHN, EVA

Examiner

Li B. Zhen

Art Unit

2126

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 August 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 10-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 10-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_                      6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 10 – 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over “Fault-Tolerance for Communicating Multidatabase Transactions” (herein referred to as Kuhn94) in view of U.S. Patent No. 5,734,898 to He.

As to claim 10, Kuhn94 teaches coordination servers (CoK, Section 3, Fig. 3), local software systems are extended by functions for managing transactions, communication objects, and processes (Section 3, CoK primitives “language&CO”), communication objects identified by object identification numbers to exchange messages (Section 3.3), transactions are used to realize communication (Section 3, an advanced communication mechanism based on shared data that can be written in transactions), only processes possessing a reference to a communication object are granted access (Section 3, each process may only see those communication objects to which it possesses a reference that is passed to the process via its parameter list), processes (Section 3.1, 3<sup>rd</sup> and 4<sup>th</sup> paragraph) are granted access to passed communication objects (communication objects may be passed in “args” ... so that they become shared between the site calling PROCESS and the site where the PROCESS is executed), communication objects are administered by replication strategies that are

selectable (Section 4.2, ...for each communication object a different strategy may be used), application programs do not depend on distribution strategies (Section 4.1, 11<sup>th</sup> paragraph,...maintenance of communication object is separated from the processes executing the programs that access communication objects; Conclusion, ...depending on the application requirements, different strategies can be employed that are realized by different replication techniques);

coordination servers have the same basic functionality and together form a global operating system (Section 3 A Distributed Coordination Kernel), so that the network of computers operates like a single global super computer (global integration approach provides totally hidden integration...gives the user the feeling of one universal interface that hides all the differences between different LSYS; Section 2, p. 2) where the addition of new processes and sites is dynamic (explicit creation of processes; Section 3, p. 3), and the distributed coordination kernels would perform distributed processing (Section 2, p. 2); and

different consistency models (strategy for the atomic write of many distributed communication objects, without causing deadlocks, Section 4, p. 5) are supported for communication object (request access to the main copy of each  $cobj_{wi}$  ...grant this request only if the object identification of its tid, which can be considered as a logical time-stamp, associated with the other TRANS is less than the own tid; left col., p. 6). Kuhn94 does not teach updateable objects and transactional blocking read of updateable objects.

However, He teaches (column 7, lines 9 – 37) updateable objects (object being updated), transactional blocking read (read lock) of updateable objects and consistency model for the updateable objects (client server system with a lock manager which guarantees consistency even when asynchronous communication is used; column 13, lines 45 – 50).

It would have been obvious to apply updateable objects as taught by He to the invention of Kuhn94 because updateable objects would reduce memory space requirements by reusing existing objects to store dynamic data instead of creating a new object. In addition, it would have been obvious to apply transactional blocking read as taught by He to the invention of Kuhn94 because transactional blocking read would preserve data integrity by blocking transactions that change the content of the object while another process is reading data from the object.

As to claim 11, Kuhn94 teaches a basic strategy is selected in combination with strategy flags (Section 4.2, ...for each communication object, a different strategy may be used—defined as part of its type description). Obviously, that the part of the type description that defines the distribution strategy could be represented in various formats, such as variables, numbers, or flags.

As to claim 12, Kuhn94 teaches (Section 3.1) the local software systems can be started by the corresponding coordination server (PROCESS primitive...can start a process—if supported by the corresponding software system it starts a thread—at another site). Since a process is used to execute an application program, starting a

process would start the software. In addition, Kuhn94 teaches (Section 3.2, Failure Behavior) the CoK recovers all communication objects, re-starts all PROCESS.

3. Claims 13 – 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuhn94, and He in view of “Logic Based and Imperative Coordination Languages” (herein referred to as Forst).

As to claim 13, Kuhn94 as modified does not teaches clearing communication objects that are no longer referenced.

However, Forst teaches (Section 5, 2<sup>nd</sup> paragraph, 2<sup>nd</sup> bullet, Garbage collection) clearing communication objects that are no longer referenced.

It would have been obvious to apply clearing communication objects that are no longer referenced as taught by Forst to the invention of Kuhn94 as modified because it would decrease memory usage by clearing objects that are no longer used.

As to claim 14, Kuhn94 as modified does not teach distributing heterogeneous transactions to different sites.

However, Forst teaches (Section 2.1.2; Section 2.1.3, 3. compensate actions) distributing heterogeneous transactions to different sites (spawn and control a process on another site), global transaction and subtransactions.

It would have been obvious to apply distributing heterogeneous transactions to different sites as taught by Forst to the invention of Kuhn94 as modified because distributing heterogeneous transactions to different sites would decreasing processing time by allowing multiple sites to perform parts of the transaction. In addition, Kuhn94 teaches (Section 3.1 Primitives for Coordination) a TRANS\_ENTRY type process that

starts a new autonomous TRANS (transaction) that runs decoupled from the call TRANS.

As to claim 15, see claim 1 above.

As to claim 16, Kuhn94 as modified teaches transaction processing (Section 3.1 of Kuhn94) but does not specify the limitations as brought out by this claim.

However, Forst teaches (Section 2.1.3) writing into an object (write/test/read of communication objects), compensation action (compensation actions), (3.3, 1<sup>st</sup> paragraph, transactions used in other transactions are name subtransaction), and starting of a subtransaction are provided as transactional predicates. As to distribution of part of a transaction to another site, see claim 14 above. Forst teaches transaction processing in a coordination system; therefore, it would have been obvious to apply the transaction predicates as taught by Forst to the invention of Kuhn94 as modified.

As to claim 17, Kuhn94 as modified does not teach starting an on-commitment action if it is sure that a transaction will commit.

However, Forst teaches (Section 3.3, 1<sup>st</sup> paragraph...several prepare/1 predicates may occur within a transaction...are called on commitment) starting an on-commitment action if it is sure that a transaction will commit (the argument of the predicate prepare/1 defines a predicate which is activated on commitment, if it is sure that all cvar/1 tests...can be performed). In addition, Forst teaches (Section 2.1.3, 4. prepared phase) prepared phases are executed by the commit procedure of a transaction when it is sure that the assignment of communication object values will be possible, i.e., the transaction will succeed (transaction commits).

It would have been obvious to apply starting an on-commitment action if it is sure that a transaction will commit as taught by Forst to the invention of Kuhn94 as modified because it would allow subtransactions to commit when the global transaction is not done processing.

As to claim 18, Kuhn94 as modified does not teach a programmable backtracking of transactional operations that dynamically repair faults or failures in the transactions. However, Forst teaches (Section 2.1.3, 5<sup>th</sup> paragraph) a programmable backtracking of transactional operations (user-defined compensate actions) that dynamically (automatically activated) repair faults (a communicated value is no longer valid) or failures in the transactions (a user-defined compensate action may be specified, which is automatically activated).

It would have been obvious to apply a programmable backtracking of transactional operations that dynamically repair faults or failures in the transactions as taught by Forst to the invention of Kuhn94 as modified because it would allow a user to define actions to respond to faults or failures.

### ***Response to Arguments***

The applicant argues, "...the notion of a global operating system is not identical with the notion of a global shared space" (p. 5, lines 7 – 8). The examiner agrees that the 'globally shared space' of Kuhn94 does not suggest a global operating system; however, Kuhn94 teaches (Section 3) a distributed coordination kernel framework that allows languages at different sites to communicate in a reliable way and perform distributed processing (Section 2, p. 2). The combination of the different sites would



form a supercomputer that performs distributed processing and the global integration approach gives the user the feeling of one universal interface that hides all the differences between different LSYS (Section 2, p. 2).

Applicant submits that the limitation “where different consistency models are supported for an updateable object” make the concept of an updateable object and its logical “time stamp” more clear (p. 5, lines 9 – 14). The examiner respectfully disagrees because the limitation cited above only suggests that the updateable object supports different consistency models but does not recite or suggest a logical time stamp. In addition, Kuhn94 as modified teaches consistency models for the updateable object (see the rejection above) and a logical time stamp (request access to the main copy of each cobj<sub>wi</sub> ... grant this request only if the object identification of its tid, which can be considered as a logical time-stamp, associated with the other TRANS is less than the own tid; left col., p. 6 of Kuhn94).

**Conclusion**

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Li B. Zhen whose telephone number is (703) 305-3406. The examiner can normally be reached on Mon - Fri, 8am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John A. Follansbee can be reached on (703) 305-8498. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Li B. Zhen  
Examiner  
Art Unit 2126

lbz  
November 6, 2003



**JOHN FOLLANSBEE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100**